THAT WHICH IS CLAIMED IS:

1. A fill limit vent valve assembly for attachment in an aperture of a fuel tank wall, the fill limit vent valve assembly comprising:

a cap member having a nozzle and a cage, the nozzle defining a vapor-inlet opening, a passageway and a vapor-outlet opening, the passageway interconnecting the vapor-inlet opening and the vapor-outlet opening;

a carrier stage including a carrier and a sealing element attached to the carrier, the sealing element defining a first seal and a second seal disposed proximate each other, the first seal having a first orifice disposed therein, the second seal having a second orifice disposed therein, the first and second orifices in communication with each other, the first orifice having a first diameter smaller than a second diameter of the second orifice, the carrier configured for axial movement in the cage for engagement of the second seal about the vapor-inlet opening;

a float stage movably connected to the carrier stage, the float stage including a pivot pin and a float defining a stem, the pivot pin movably disposed on the stem, the sealing element spaced apart from the pivot pin and the vapor-inlet opening in a first valve assembly condition for substantially unrestricted vapor venting; and

a valve housing attachable to the cap member, the valve housing at least partially disposed within an interior of a fuel tank, the valve housing defining a cavity therein and configured to house the carrier and float stages, the valve housing including a window and a guide channel, the window configured to pass a liquid fuel into the cavity to actuate the float stage such that the pivot pin contacts the first seal to reduce a fuel vapor vent

rate in a second valve assembly condition and to limit a fuel level in the fuel tank in a third valve assembly condition, the cage and the guide channel cooperable to control displacement of the float.

2. The valve assembly as in Claim 1, wherein the nozzle defines an annular recess thereon, the annular recess configured for seating a seal.

3. The valve assembly as in Claim 2, wherein the seal is selected from the group consisting of a sealant, a gasket, an o-ring, and combinations thereof.

4. The valve assembly as in Claim 1, wherein the cage defines a vent window therethrough, the vent window in vapor communication with the passageway of the nozzle, the vent window configured to provide at least two fuel vapor vent rates during respective first and second valve assembly conditions.

5. The valve assembly as in Claim 4, wherein the vent window is a plurality of vent windows, each vent window being sized and positioned to permit the first fuel vapor vent rate in the first valve assembly condition and to permit the second fuel vapor vent rate in response to an engagement of the pivot pin with the first seal in the second valve assembly condition.

6. The valve assembly as in Claim 1, wherein the cage defines a notch therethrough, the notch configured to make the cage flexible relative to the carrier for axial insertion of the carrier in the cage.

7. The valve assembly as in Claim 1, wherein the cage defines a ledge and the carrier defines a projection, the projection configured to rest on the ledge to limit an axial movement of the carrier in the first valve assembly condition.

8. The valve assembly as in Claim 7, wherein the projection is further configured to space the first seal apart from the pivot pin from about 1 mm to about 4 mm in the first valve assembly condition.

9. The valve assembly as in Claim 8, wherein the projection is configured to permit the pivot pin to contact the first seal substantially only in the second and third valve assembly conditions.

10. The valve assembly as in Claim 1, wherein the sealing element is overmolded with the carrier.

11. The valve assembly as in Claim 1, wherein the second seal defines a circumferential lip configured to seal about the inlet of the nozzle, the second seal flaring from proximate the large orifice to the circumferential lip.

12. The valve assembly as in Claim 11, wherein the circumferential lip is disposed substantially flush with a seal seat of the carrier.

13. The valve assembly as in Claim 1, wherein the second seal is chamfered relative to the carrier.

14. The valve assembly as in Claim 1, wherein the first orifice is about 1 mm to about 5 mm in diameter.

15. The valve assembly as in Claim 1, wherein the second orifice is about 12 mm to about 18 mm in diameter.

16. The valve assembly as in Claim 1, wherein the first and second orifice are in selective vapor communication with the vapor-inlet opening and cooperably configured to reopen the pivot pin of the float stage from about the first seal at between about 1 kPa to about 3 kPa.

17. The valve assembly as in Claim 1, wherein the first and second orifice are in selective vapor communication with the vapor-inlet opening and cooperably configured to reopen the second seal from about the vapor-inlet opening at between about 14 kPa to about 18 kPa.

18. The valve assembly as in Claim 1, wherein the stem is dome-shaped in cross-section.

19. The valve assembly as in Claim 1, wherein the pivot pin defines a catch and the float defines a ring, the catch configured to catch the ring in a fourth fuel valve assembly condition.

20. The valve assembly as in Claim 19, wherein the ring is configured to slidably contact an inner surface of the carrier, the ring and the inner surface cooperable to form a pressure chamber in the carrier in the third and fourth fuel valve assembly conditions.

21. The valve assembly as in Claim 20, wherein the pressure chamber defines a pressure of about 0.5 to about 0.95 of a pressure in the fuel tank in the third and fourth fuel valve assembly conditions.

22. The valve assembly as in Claim 21, wherein the pressure chamber defines a pressure of between about 5 kPa to about 10 kPa and the pressure in the fuel tank is between about 9.5 kPa to about 11.5 kPa.

23. The valve assembly as in Claim 1, wherein the pivot pin defines a first contact surface and a second contact surface, the stem configured as a point-bearing surface relative to the first contact surface such that the first contact surface is tiltable on the stem to align and seal the second contact surface about the first seal in the second fuel valve assembly condition.

24. The valve assembly as in Claim 23, wherein the pivot pin the second contact surface and the first seal form a gap therebetween, the gap measuring between about 1 mm to about 4 mm, the gap configured to prevent the pivot pin and the first seal from touching in the first valve condition.

25. The valve assembly as in Claim 1, wherein the float defines a stop disposed proximate the stem and the pivot pin defines a stop surface, the stop and stop surface configured to limit an axial movement of the float.

26. The valve assembly as in Claim 25, wherein the stop and the stop surface define a space therebetween from about 1 mm to about 2.5 mm in the first and third fuel valve assembly conditions.

27. The valve assembly as in Claim 1, wherein the window of the valve housing defines a fuel entry edge, the fuel entry edge configured to permit a liquid fuel to enter the cavity of the valve housing to transition the valve assembly from the second valve assembly condition to the third valve assembly condition.

28. The valve assembly as in Claim 27, wherein the window of the valve housing defines a fill-limit edge disposed adjacent the fuel entry edge, the fill-limit edge configured to prevent fuel filling in the third valve assembly condition.

29. The valve assembly as in Claim 28, wherein the fill-limit edge is spaced vertically apart from about 1 mm to about 4 mm from the fuel entry edge in a direction of the cap member.

30. The valve assembly as in Claim 1, wherein the valve housing defines a hole therethrough, the hole disposed proximate the guide channel and sized to permit a selected amount of a liquid fuel to enter the cavity such that the float and the liquid fuel

rise substantially evenly during a first refueling rate until the liquid fuel passes through the window of the valve housing.

31. The valve assembly as in Claim 1, further comprising means for attaching the cap member and the valve housing together.

32. The valve assembly of Claim 31, wherein the means for attaching includes a retaining projection depending from the cap member and a receptacle defined in the valve housing, the retaining projection configured to snap-fit in the receptacle to hold the cap member and the valve housing together.

33. The valve assembly of Claim 32, wherein the retaining projection is configured to flex relative to the valve housing upon axial connection of the cap member and the valve housing.

34. The valve assembly as in Claim 1, further comprising a guard depending from one of the cap member and the valve housing, the guard disposed proximate the window and configured to reduce a liquid fuel splash from a liquid fuel entering the window.

35. A valve assembly for attachment in a fuel tank wall, the valve assembly comprising:

a cap member defining a nozzle and a cage, the nozzle defining a vapor-inlet opening and a vapor-outlet opening in vapor communication with each other;

a sealing element attached to a carrier, the carrier movably disposed in the cage, the sealing element defining a first seal and a second seal disposed proximate each other,

the first seal having a first smaller orifice therethrough, the second seal having a second larger orifice therethrough, the first and second orifices in communication with each other;

a pivot pin movably disposed on a float, the sealing element disposed apart from the pivot pin and the vapor-inlet opening in an unrestricted vapor venting condition; and

a valve housing attachable to the cap member, the cage depending into an interior of the valve housing, the valve housing disposed within an interior of a fuel tank and defining a window therethrough, the window configured to pass a fuel into the valve housing to raise the float such that the pivot pin contacts the first seal and lifts the carrier to seal the second seal about the vapor-inlet opening to limit a fuel level in the fuel tank.

36. The valve assembly as in Claim 35, wherein the cage defines a vent window therethrough in vapor communication with the passageway of the nozzle, the vent window configured to vent fuel vapor until the pivot pin is sealed against the first seal and the second seal is sealed about the vapor-inlet opening.

37. The valve assembly as in Claim 35, wherein the second seal defines a circumferential lip disposed substantially flush with the carrier, the circumferential lip configured to seal about the inlet of the nozzle.

38. The valve assembly as in Claim 35, the first smaller orifice is about 1 mm to about 5 mm in diameter.

39. The valve assembly as in Claim 35, wherein the second larger orifice is about 4 mm to about 8 mm in diameter.

40. The valve assembly as in Claim 35, wherein the float defines a stem depending therefrom in a direction of the first seal.

41. The valve assembly as in Claim 40, wherein the stem is dome-shaped in cross-section.

42. The valve assembly as in Claim 41, wherein the pivot pin is tiltable on the stem such that the pivot pin is alignable to seal about the first seal.

43. The valve assembly as in Claim 41, further comprising a guide channel defined in the valve housing, the guide channel cooperable with the cage to control displacement of the float in the valve housing.

44. The valve assembly as in Claim 35, wherein the pivot pin defines a catch and the float defines a ring, the catch configured to catch the ring in a first stage of re-opening.

45. The valve assembly as in Claim 44, wherein the ring is configured to slidably contact an inner surface of the carrier, the ring and the inner surface cooperable to form a pressure chamber within the carrier in a non-venting condition.

46. The valve assembly as in Claim 45, wherein the pressure chamber defines a pressure of about 0.5 to about 0.95 of a pressure in the fuel tank prior to venting.

47. The valve assembly as in Claim 46, wherein the pressure chamber defines a pressure of between about 5 kPa to about 10 kPa and the pressure in the fuel tank is between about 9.5 kPa to about 11.5 kPa.

48. The valve assembly as in Claim 35, wherein the valve housing defines a hole therethrough, the hole sized to permit a selected amount of a liquid fuel to enter the valve housing such that the float and the liquid fuel rise substantially evenly during refueling rate.

49. The valve assembly as in Claim 35, further comprising a guard depending from one of the cap member and the valve housing, the guard disposed proximate the window and configured to reduce a liquid fuel splash from a liquid fuel entering the window.

50. The valve assembly as in Claim 35, wherein the nozzle and the float are disposed offset from each other such that a liquid fuel splash is deflected away from the nozzle and contained in the interior of the valve housing.

51. A fuel tank valve assembly having a nozzle defining a vapor-inlet opening, a passageway, and a vapor-outlet opening in vapor communication with each other, the valve assembly comprising:

a housing configured for attachment to a fuel tank and disposed therein in vapor communication with the vapor-inlet opening, the housing defining an interior having a cage disposed therein;

a carrier slidably mounted in the cage;

a sealing element carried on the carrier, the sealing element defining a first seal and a second seal in vapor communication with each other; and

a float disposed in the interior of the housing, the carrier and second seals respectively disengaged from the float and the vapor-inlet opening in a first valve assembly condition, the float configured to raise the carrier and the sealing element in a third valve assembly condition such that the second seal seals about the vapor-inlet opening to limit a fuel level in the fuel tank.

52. The fuel tank valve assembly as in Claim 51, wherein the second seal defines a circumferential lip disposed substantially flush with the carrier, the circumferential lip configured to seal about the vapor-inlet opening.

53. The fuel tank valve assembly as in Claim 51, wherein the first seal defines a first smaller orifice therethrough and the second seal defines a second larger orifice therethrough.

54. The fuel tank valve assembly as in Claim 53, wherein the first smaller orifice is about 1 mm to about 5 mm in diameter.

55. The fuel tank valve assembly as in Claim 53, wherein the second larger orifice is about 4 mm to about 8 mm in diameter.

56. The fuel tank valve assembly as in Claim 51, wherein the cage defines a vent window therethrough in vapor communication with the vapor-inlet opening, the vent

window configured to vent fuel vapor until the second seal is sealed about the vapor-inlet opening.

57. The valve assembly as in Claim 51, further comprising a pivot pin movably disposed on the float.

58. The valve assembly as in Claim 57, wherein the float defines a stem depending therefrom in a direction of the first seal, the pivot pin tiltably disposed on the stem such that the pivot pin is alignable to seal about the first seal.

59. The valve assembly as in Claim 51, wherein the pivot pin defines a catch and the float defines a ring, the catch configured to catch the ring in a first stage of re-opening.

60. The valve assembly as in Claim 59, wherein the ring is configured to slidably contact an inner surface of the carrier, the ring and the inner surface cooperable to form a pressure chamber within the carrier in a non-venting condition.

61. The valve assembly as in Claim 60, wherein the pressure chamber defines a pressure of about 0.5 to about 0.95 of a pressure in the fuel tank prior to venting.

62. The valve assembly as in Claim 51, further comprising a guide channel, the guide channel and the cage cooperable to control movement of the float, the guide channel and the cage formed and sized such that sealing is substantially unaffected due to swelling by heat or immersion in fuel.

63. A fuel tank vent apparatus in vapor communication with an interior of a fuel tank for discharge of fuel vapor from the fuel tank, the fuel tank vent apparatus comprising:

a vent module with a housing adapted to be mounted in a fuel tank aperture, the vent module being formed to include a sealing element slidably mounted in an interior of the housing for movement between a venting position allowing flow of fuel vapor from the interior to a destination outside the vent module and a sealed position preventing flow of fuel vapor from the vent module, the sealing element defining a first seal and a second seal spaced apart in vapor communication with each other and disengaged from respective sealing surfaces in the vent module in the venting position.

64. The fuel tank vent apparatus as in Claim 63, wherein the first seal has a first orifice disposed therein and the second seal has a second orifice disposed therein, the first orifice defining a first diameter smaller than a second diameter defined by the second orifice such that the sealing element defines a funnel-shape cross-section configured to urge a liquid fuel disposed on the sealing element into the interior of the housing.

65. The fuel tank vent apparatus as in Claim 63, further comprising a cage attached in the interior of the housing and a carrier slidably disposed in the cage with the sealing element mounted to the carrier.

66. The fuel tank vent apparatus as in Claim 65, wherein the second seal defines a circumferential lip disposed substantially flush with the carrier, the circumferential lip configured to seal about the vapor-inlet opening when the carrier lifts the sealing element.

67. The fuel tank vent apparatus as in Claim 65, further comprising a float disposed in the interior of the housing, the float configured to raise the carrier and the sealing element in a third valve assembly condition such that the second seal seals about the vapor-inlet opening to limit a fuel level in the fuel tank.

68. The fuel tank vent apparatus as in Claim 67, further comprising a pivot pin movably disposed on the float.

69. The fuel tank vent apparatus as in Claim 68, wherein the float defines a stem depending in a direction of the first seal, the pivot pin tiltably disposed on the stem such that the pivot pin is alignable to seal about the first seal.

70. The fuel tank vent apparatus as in Claim 63, wherein the respective sealing surfaces are an area disposed about a vapor-inlet opening in communication with the interior of the housing and a contact surface on a float.

71. The fuel tank vent apparatus as in Claim 63, further comprising a rib depending from one of the float and the valve housing to limit an axial movement of the float.